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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,943	02/04/2004	Ki-Cheol Lee	5000-1-518	3771

33942 7590 03/03/2008
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EXAMINER	
PATEL, JAY P	

ART UNIT	PAPER NUMBER
2619	

MAIL DATE	DELIVERY MODE
03/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/771,943	Applicant(s) LEE ET AL.	
	Examiner JAY P. PATEL	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 9-19* is/are rejected.

7)☒ Claim(s) *3-8 amd 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Claim Objections

1. Claims 6 and 20 objected to because of the following informalities:

2. They mention the term “a second WDM coupler”. However, there is no mention of a first WDM coupler in the parent claims. Appropriate correction is required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In *re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 14 of copending Application No. 10811600 in view of Sala et al. (US Patent 7245621 B2).

This is a <u>provisional</u> obviousness-type double patenting rejection.

5. In regards to claims 1-2 of the present application, they merely substitute a frequency division multiplexing system instead on a time-division multiplexing system present in claim 14 of the co-pending application.

6. Sala however teaches the use of TDM in a passive optical network (see column 5, lines 60-67). Furthermore, claim 14 of the present application also eliminates the QAM modulators from the apparatus.

7. It would have been obvious for one of ordinary skill in the art at the time the invention was made to eliminate such architecture. The motivation to do so would be reduce the size of the hardware and integrate the modulation process in an already integrated element.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sala et al. (US Patent 7245624 B2) in view of Wong (US Patent 6058227) further in view of Kuo et al. (US Patent 7272321 B1).

3. In regards to claim 1, Sala illustrates in figure 1, an Ethernet-based passive optical network inclusive of optical line terminal 102. OLT 102 manages upstream and/or downstream modulation and bandwidth allocation (modulating switch data). OLT 102 also routes signals from optical nodes 106 to a destined location over backbone network 110 (switching digital broadcasting and/or digital image data according to broadcasting and/or image selection from each of the multiple optical network terminals). As mentioned before, OLT 102 manages upstream and/or downstream

modulation and bandwidth allocation (coupling with a communication signal a signal formed from combining the modulated data and the communication signal being obtained by optically modulating communication data from an IP network). Furthermore, each downstream channel is configured to carry various types of information to optical network terminal 106 including television signals, data packets (IP datagrams), voice packets, etc. (transmitting the coupled signal, the digital broadcasting and/or digital image data being transmitted from an outside broadcaster).

In further regards to claim 1, the Ethernet-based passive optical network is also inclusive of multiple optical network terminals 106 (ONTs being configured for receiving an optical signal from the OLT). Figure 8 further illustrates ONT 106 of figure 1. Physical layer 802 modulates signals to be transmitted (receiving from the user communication data and the broadcasting and/or image selection information and outputting the communication data and broadcasting and/or image selection information to the OLT).

In further regards to claim 1, the Ethernet-based passive optical network is also inclusive of a passive optical splitter/combiner 104 (a divider), provided to demultiplex (for dividing the signal from the OLT among multiple ONTs) and multiplex bi-directional communication with each ONT 106 (joining signals from the multiple ONTs, and transmitting the joined signal to the OLT).

In further regards to claim 1, Sala fails to teach the steps of modulating switched data into frequencies assigned to each ONT, converting the divided signals into electrical signals, demodulating the converted combined signal into assigned

frequencies and outputting the demodulated information and the converted communication signal to a user. Wong however, teaches the above-mentioned limitations. Wong shows in figure 1 an optical receiver unit 30 inclusive of an optical-to-electrical receiver 34 for converting optical signals to electrical signals (converting the divided signals into electrical signals).

Wong also shows a receiver circuit in figure 5 having a QAM demodulator (demodulating the converted combined signal into assigned frequencies) which are sent to the destination at the output of the decoder 99 (outputting the demodulated information and the converted communication signal to a user).

Wong also teaches a transmitter circuit in figure 4, having a QAM modulator (modulating switched data into frequencies assigned to each ONT).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the QAM modulation and demodulation process taught by Wong into the network taught by Sala. The motivation to do so would to utilize frequency division multiplexing and QAM to achieve a high-bandwidth circuit switching architecture with full broadcasting and non-blocking capabilities (supported by Wong, see column 1, lines 50-63).

In further regards to claim 1, neither Sala nor Wong teaches dividing the optical signals into two different signals (i.e. a combination broadcast/image signals and a communication signal (an IP signal that is optically modulated)). However, Kuo teaches WDM couplers 462 and 464 which demultiplex (divide) wavelengths 11 and 12. Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate the WDM coupler taught by Kuo into the network the optical network taught by Sala along with the modulation/demodulation process taught by Wong. The motivation to do so would be to demultiplexed the desired optical wavelength from a combined signal (see column 2, lines 31-33 in Kuo).

In regards to claim 9, Sala teaches that OLT 102 supports full duplex voice, data, video, etc. communications with ONT 106.

In regards to claim 10, Sala in combination with Wong and Kuo teaches all the limitations of parent claims 1 and 9. However Sala fails to teach, demodulating plurality of frequencies for an ONT. Wong however teaches the above-mentioned limitation. Wong also shows a receiver circuit in figure 5 having a QAM demodulator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the QAM modulation and demodulation process taught by Wong into the network taught by Sala and the WDM coupler taught by Kuo. The motivation to do so would to utilize frequency division multiplexing and QAM to achieve a high-bandwidth circuit switching architecture with full broadcasting and non-blocking capabilities (supported by Wong, see column 1, lines 50-63).

In regards to claim 11, Sala teaches that OLT 102 supports full duplex voice, data, video, etc. communications with ONT 106.

In regards to claim 12, Sala teaches that OLT 102 supports full duplex voice, data, video, etc. communications with ONT 106.

In regards to claim 13, Sala in combination with Wong and Kuo teaches all the limitations of parent claim 1. However Sala fails to teach, demodulating plurality of

frequencies for an ONT. Wong however teaches the above-mentioned limitation. Wong also shows a receiver circuit in figure 5 having a QAM demodulator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the QAM modulation and demodulation process taught by Wong into the network taught by Sala and the WDM coupler taught by Kuo. The motivation to do so would to utilize frequency division multiplexing and QAM to achieve a high-bandwidth circuit switching architecture with full broadcasting and non-blocking capabilities (supported by Wong, see column 1, lines 50-63).

In regards to claim 14, Sala teaches that OLT 102 supports full duplex voice, data, video, etc. communications with ONT 106.

In regards to claim 15, Sala teaches that OLT 102 supports full duplex voice, data, video, etc. communications with ONT 106.

4. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sala et al. (US Patent 7245624 B2) in view of Kuo et al. (US Patent 7272321 B1).

5. In regards to claim 16, Sala illustrates in figure 1, an Ethernet-based passive optical network inclusive of optical line terminal 102. OLT 102 manages upstream and/or downstream modulation and bandwidth allocation (modulating switch data). OLT 102 also routes signals from optical nodes 106 to a destined location over backbone network 110 (switching digital broadcasting and/or digital image data according to broadcasting and/or image selection from each of the multiple optical network terminals). As mentioned before, OLT 102 manages upstream and/or downstream

modulation and bandwidth allocation (coupling with a communication signal a signal formed from combining the modulated data and the communication signal being obtained by optically modulating communication data from an IP network). Furthermore, each downstream channel is configured to carry various types of information to optical network terminal 106 including television signals, data packets (IP datagrams), voice packets, etc. (transmitting the coupled signal, the digital broadcasting and/or digital image data being transmitted from an outside broadcaster).

In further regards to claim 16, Sala fails to teach the steps of modulating switched data into frequencies assigned to each ONT. Wong however, teaches the above-mentioned limitation. Wong also teaches a transmitter circuit in figure 4, having a QAM modulator (modulating switched data into frequencies assigned to each ONT).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the QAM modulation and demodulation process taught by Wong into the network taught by Sala. The motivation to do so would to utilize frequency division multiplexing and QAM to achieve a high-bandwidth circuit switching architecture with full broadcasting and non-blocking capabilities (supported by Wong, see column 1, lines 50-63).

In regards to claim 17, Sala teaches that OLT 102 supports full duplex voice, data, video, etc. communications with ONT 106.

In regards to claim 18, Sala in combination with Wong teaches all the limitations of parent claim 16. However Sala fails to teach, demodulating plurality of frequencies

for an ONT. Wong however teaches the above-mentioned limitation. Wong also shows a receiver circuit in figure 5 having a QAM demodulator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the QAM modulation and demodulation process taught by Wong into the network taught by Sala. The motivation to do so would to utilize frequency division multiplexing and QAM to achieve a high-bandwidth circuit switching architecture with full broadcasting and non-blocking capabilities (supported by Wong, see column 1, lines 50-63).

In regards to claim 19, the Ethernet-based passive optical network taught by Sala is also inclusive of multiple optical network terminals 106 (ONTs being configured for receiving an optical signal from the OLT). Figure 8 further illustrates ONT 106 of figure 1. Physical layer 802 modulates signals to be transmitted (receiving from the user communication data and the broadcasting and/or image selection information and outputting the communication data and broadcasting and/or image selection information to the OLT).

In further regards to claim 19, Sala fails to teach the steps of modulating switched data into frequencies assigned to each ONT, converting the divided signals into electrical signals, demodulating the converted combined signal into assigned frequencies and outputting the demodulated information and the converted communication signal to a user. Wong however, teaches the above-mentioned limitations. Wong shows in figure 1 an optical receiver unit 30 inclusive of an optical-to-

electrical receiver 34 for converting optical signals to electrical signals (converting the divided signals into electrical signals).

Wong also shows a receiver circuit in figure 5 having a QAM demodulator (demodulating the converted combined signal into assigned frequencies) which are sent to the destination at the output of the decoder 99 (outputting the demodulated information and the converted communication signal to a user).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the QAM modulation and demodulation process taught by Wong into the network taught by Sala. The motivation to do so would to utilize frequency division multiplexing and QAM to achieve a high-bandwidth circuit switching architecture with full broadcasting and non-blocking capabilities (supported by Wong, see column 1, lines 50-63).

Conclusion

6. Claims 3-8 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAY P. PATEL whose telephone number is (571)272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. P. P./
Examiner, Art Unit 2619
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